Trends in the reading proficiency of 9-, 13-, and 17-year-olds

Students' ability to read is essential to their educational progress. If students fall behind in reading proficiency, they may find it difficult to benefit from other aspects of the curriculum. In the future, poor readers may also find it difficult to participate effectively in a society requiring increasingly sophisticated job skills.

- Overall, reading proficiency for 9-year-olds improved between 1971 and 1980, declined between 1980 and 1990, and was stable between 1990 and 1996. Little change occurred from 1971 to 1996 at ages 13 and 17, although scores for 17-year-olds increased slightly between 1971 and 1984.
- Females continued to outscore males in reading proficiency across all age groups.
- For all three age levels, average scores for black students rose by about 20 or more scale points between 1971 and 1988, and in 1996, the average scores were higher than those in 1971. The gap between the scores of white and black students consequently decreased at ages 9 and 17 between 1971 and 1996.
- In 1996, there was an average proficiency difference of 47 scale points between 9- and 13-year-olds, and a difference of 28 scale points between 13- and 17-year-olds. This pattern holds true for both genders and all racial/ethnic groups.

Average reading proficiency (scale scores), by sex and age: 1971–96

	Total			Male			Female		
Year	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	[1]208	[1]255	285	[1]201	250	279	[1]214	[1]261	291
1975	210	256	286	204	250	280	216	262	[1]291
1980	[2]215	259	286	[2]210	[2]254	282	[2]220	263	[1]289
1984	[2]211	257	[2]289	[2]208	[2]253	284	214	262	294
1988	[2]212	258	[2]290	[2]208	252	[2]286	216	263	294
1990	209	257	[2]290	204	251	284	215	263	[2]297
1992	211	[2]260	[2]290	[2]206	254	[2]284	215	[2]265	296
1994	[2]211	258	288	[2]207	251	282	215	[2]266	295
1996	[2]212	[2]259	287	[2]207	253	280	[2]218	[2]265	294

Average reading proficiency (scale scores), by race/ethnicity and age: 1971–96

	White			Black			Hispanic		
Year	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	[1]214	[1]261	291	[1]170	[1]222	[1]239	—	—	—
1975	217	262	293	[2]181	[1]226	[1]241	[1]183	232	252
1980	[1,2]221	[2]264	293	[2]189	[2]233	[1]243	190	237	261
1984	[2]218	263	[2]295	[2]186	[2]236	[2]264	187	240	[2]268
1988	218	261	295	[2]189	[2]243	[2]274	[2]194	240	[2]271
1990	217	262	[2]297	[2]182	[2]242	[2]267	189	238	[2]275
1992	[2]218	[2]266	[2]297	[2]185	[2]238	[2]261	192	239	[2]271
1994	[2]218	[2]265	296	[2]185	[2]234	[2]266	186	235	263
1996	[2]220	[2]267	294	[2]190	[2]236	[2]265	[2]194	240	265

— Not available.

[1] Statistically significant difference from 1996.

[2] Statistically significant difference from 1971 for whites and blacks and from 1975 for Hispanics.

NOTE: See the supplemental note to *Indicator 16* for further discussion of the NAEP assessments. The reading proficiency scale has a range from 0 to 500. (See supplemental table 16-1 for further explanations of levels.)

Level 150: Simple, discrete reading tasks

Level 200: Partial skills and understanding

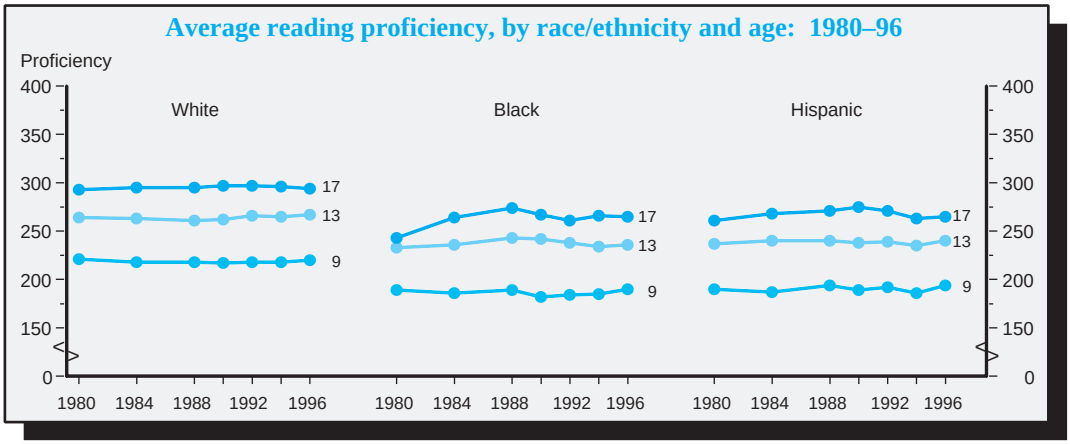
Level 250: Interrelates ideas and makes generalizations

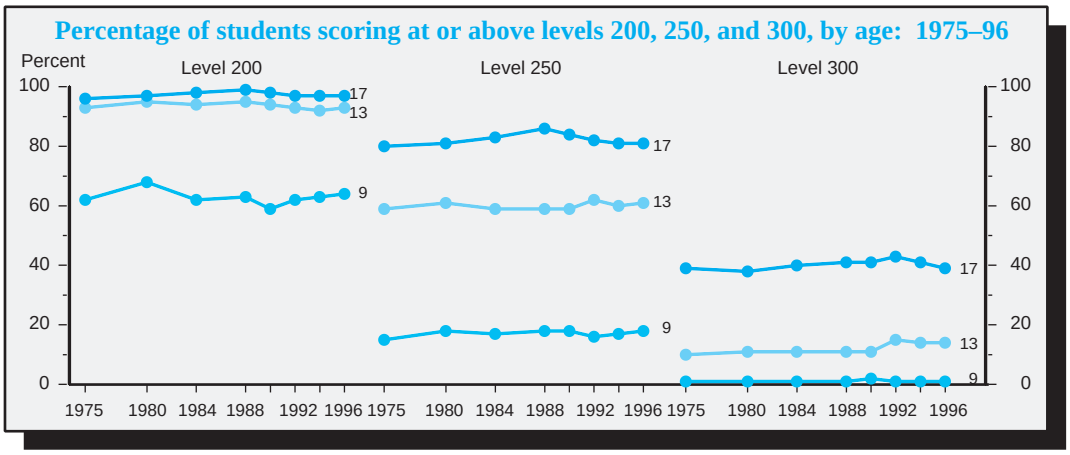
Level 300: Understands complicated information

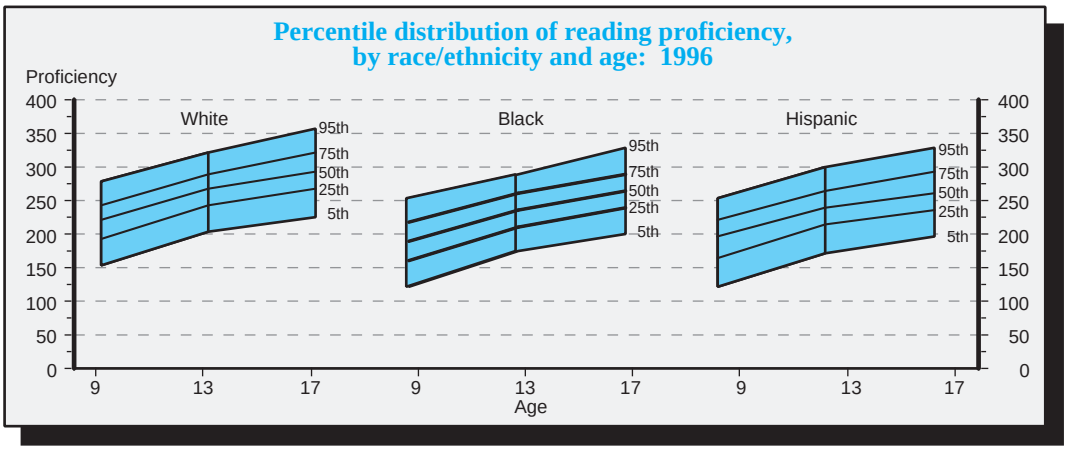
Level 350: Learns from specialized reading materials

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress*, 1997.

Average reading proficiency (scale score)







NOTE: The reading proficiency scale has a range from 0 to 500. (See supplemental table 16-1 for further explanations of levels.)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress*, 1997.

Table 16-1 Explanations of levels of reading proficiency

Level 150: Simple, discrete reading tasks

Readers at this level can follow brief written directions. They can also select words, phrases, or sentences to describe a simple picture and can interpret simple written clues to identify a common object. Performance at this level suggests the ability to carry out simple, discrete reading tasks.

Level 200: Partial skills and understanding

Readers at this level can locate and identify facts from simple informational paragraphs, stories, and news articles. In addition, they can combine ideas and make inferences based on short, uncomplicated passages. Performance at this level suggests the ability to understand specific or sequentially related information.

Level 250: Interrelates ideas and make generalizations

Readers at this level use intermediate skills and strategies to search for, locate, and organize the information they find in relatively lengthy passages and can recognize paraphrases of what they have read. They can also make inferences and reach generalizations about main ideas and the author's purpose from passages dealing with literature, science, and social studies. Performance at this level suggests the ability to search for specific information, interrelate ideas, and make generalizations.

Level 300: Understands complicated information

Readers at this level can understand complicated literary and informational passages, including material about topics they study at school. They can also analyze and integrate less familiar material and provide reactions to and explanations of the text as a whole. Performance at this level suggests the ability to find, understand, summarize, and explain relatively complicated information.

Level 350: Learns from specialized reading materials

Readers at this level can extend and restructure the ideas presented in specialized and complex texts. Examples include scientific materials, literary essays, and historical documents. Readers are also able to understand the links between ideas, even when those links are not explicitly stated, and to make appropriate generalizations. Performance at this level suggests the ability to synthesize and learn from specialized reading materials.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress*, 1997.

Table 16-2 Percentage of students ages 9, 13, or 17 scoring at or above five levels of reading proficiency: 1971–96

		Year								
Proficiency level	Age	1971	1975	1980	1984	1988	1990	1992	1994	1996
Level 150:	9	91	93	95	92	93	90	92	92	*93
Simple, discrete	13	100	100	100	100	100	100	100	99	100
reading tasks	17	100	100	100	100	100	100	100	100	100
Level 200:	9	59	62	68	62	63	59	62	63	*64
Partial skills and	13	93	93	95	94	95	94	93	92	93
understanding	17	96	96	97	98	99	98	97	97	*97
Level 250:	9	16	15	18	17	18	18	16	17	18
Interrelates ideas and	13	58	59	61	59	59	59	62	60	61
make generalizations	17	79	80	81	83	86	84	83	81	81
Level 300:	9	1	1	1	1	1	2	1	1	1
Understands complicated	13	10	10	11	11	11	11	15	14	*14
information	17	39	39	38	40	41	41	43	41	39
Level 350:	9	0	0	0	0	0	0	0	0	0
Learns from specialized	13	0	0	0	0	0	0	1	1	*1
reading materials	17	7	6	5	6	5	7	7	7	6

* Statistically significant difference from 1971.

NOTE: See table 16-1 for further explanations of the proficiency levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress*, 1997.

Table 16-3 Percentile distribution of reading proficiency scores, by age and race/ethnicity: 1980–96

Per-	Age 9							Age 13							Age 17						
centile	1980	1984	1988	1990	1992	1994	1996	1980	1984	1988	1990	1992	1994	1996	1980	1984	1988	1990	1992	1994	1996
All students																					
5	149	141	142	135	141	140	142	199	197	200	196	191	188	192	213	220	226	220	214	211	213
10	165	157	157	150	156	156	158	213	210	213	210	208	205	209	231	236	242	237	233	230	231
25	191	184	184	179	183	184	185	235	234	234	233	235	233	235	259	263	266	264	263	260	259
50	217	213	214	210	214	215	216	260	258	258	257	262	260	261	288	290	291	291	293	290	288
75	241	240	240	240	239	240	241	283	282	281	282	287	285	286	315	317	316	319	319	319	316
90	262	263	263	266	260	260	262	302	302	302	302	309	307	307	338	340	337	343	343	343	340
95	273	277	278	280	272	272	274	314	314	314	314	322	320	319	351	353	349	356	356	358	354
White																					
5	161	152	150	144	153	152	154	209	205	204	204	204	200	205	229	230	233	229	228	222	225
10	175	167	165	160	167	168	169	222	218	217	217	219	217	221	244	246	247	246	245	241	242
25	199	192	192	188	193	194	195	243	241	238	240	243	242	245	268	271	271	271	272	270	269
50	223	220	219	218	221	221	223	265	263	262	263	268	267	269	294	297	295	298	300	298	296
75	246	245	244	247	244	244	246	287	286	285	286	292	290	291	319	322	320	324	325	324	322
90	265	267	267	271	264	263	266	306	305	304	306	312	311	311	341	343	340	347	347	347	346
95	276	280	281	285	276	275	279	317	317	316	318	324	324	324	354	356	352	360	359	361	358
Black																					
5	123	121	125	115	119	119	123	179	180	191	182	170	170	176	176	202	214	201	188	192	200
10	139	135	138	129	132	133	136	191	192	202	194	185	183	188	191	216	228	217	206	210	216
25	165	159	162	153	156	155	161	211	213	222	217	210	208	211	217	239	251	242	235	239	241
50	192	187	188	182	185	186	190	233	236	242	243	239	236	237	244	264	274	268	263	268	266
75	216	213	217	211	214	216	220	255	259	264	266	266	261	261	270	288	300	294	288	296	290
90	236	235	238	236	236	237	242	275	280	284	286	287	283	281	293	311	321	316	312	318	314
95	247	248	252	251	249	248	255	286	293	299	299	303	295	292	307	324	333	331	328	335	330
Hispanic																					
5	123	120	122	125	125	119	124	183	181	181	178	165	174	174	194	202	204	206	193	187	198
10	138	135	140	139	139	134	139	195	193	195	191	184	187	190	208	217	218	224	213	203	212
25	164	161	165	161	163	157	166	215	216	219	214	213	211	216	235	242	246	250	241	236	237
50	192	189	196	189	193	184	197	238	240	240	239	242	236	242	263	269	274	276	275	264	264
75	218	215	222	219	222	216	223	259	264	262	262	267	260	265	289	295	298	303	303	294	293
90	238	236	247	239	245	243	246	279	284	284	284	289	282	288	313	318	316	327	326	318	317
95	250	247	259	253	255	255	256	291	296	297	296	303	298	300	325	332	328	339	337	331	329

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress,* 1997.

Note to Indicator 16: NAEP Cohorts

Long-term trend

Three of the NAEP assessments, reading, mathematics, and science, report trends in the progress of students by age. Proficiencies are reported for those students ages 9, 13, and 17. The modal grades for students at these ages are 4th, 8th, and 11th grade. The fourth assessment, writing, is given to students in grades 4, 8, and 11, regardless of their age. In all four subjects, it would appear that the time span between the youngest and middle age/grade is greater than between the middle and oldest group. However, the way age is defined (on a calendar or fiscal year basis) and the time at which each age/grade is assessed (fall, winter, or spring) results in the same length of time (or years of schooling) between the three age/grade groups. A discussion of this methodology follows.

Age is determined on a calendar year basis for 9- and 13-year-olds, but on a fiscal year basis for 17-year-olds. In other words, the reading, mathematics, and science scores in 1994 represent students born in 1984 (9-year-olds), students born in 1980 (13-year-olds), and students born between October 1, 1976, and September 30, 1977 (17-year-olds). The writing scores represent students in grades 4, 8, or 11 at the time of the assessment, regardless of age.

In addition to different age definitions, the time of the school year when the assessment is administered varies across age levels: 9-year-olds/4th-graders are tested in the winter; 13-year-olds/8th-graders are tested in the fall; and 17-year-olds/11th-graders are tested in the spring on each of the assessments. Since 9-year-olds are tested between January and February of the year in which they turn 10, and 13-year-olds are tested between October and December of the year in which they turn 13, the 13-year-olds have had almost 3 3/4 more years of schooling than the 9-year-olds. Likewise, since 17-year-olds are tested between March and May, they are between 16 1/2 and 17 1/2 at the time of the assessment (the difference is due to age being determined on a fiscal year basis); thus, they have had about 3 3/4 more years of exposure to school than 13-year-olds.

These different means of determining a student's age and the various testing times have been adopted in order to measure a uniform period of growth among the three age/grade groups. Comparing age/grade cohorts over time can be more problematic, however. Nine-year-olds in 1990 generally represent the same age cohort as 13-year-olds in 1994—two points in time not quite 4 years apart. However, the 17-year-olds tested in 1994 were generally younger than the 1990 13-year-old age cohort was in 1994. Therefore, care must be taken when examining student cohorts across assessments in different years.

Short-term trend

Although *Indicator 18* (Trends in the mathematics proficiency of 9-, 13-, and 17-year-olds) focused primarily on the trend data described above, supplemental data from the *NAEP 1996 Mathematics Report Card* were also included. These more recent data allow for trend comparisons just over the short term, since only the scores from the 1990, 1992, and 1996 surveys are comparable. These data were based on a separate survey instrument than those from the long-term trend data and were given to different students. The short-term trend assessment was designed using a framework influenced by the National Council for Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards for School Mathematics. The long-term trend assessment has remained unchanged since its original design in 1973 and can be used to make comparisons in the performance of students over the past 21 years. One important difference of the short-term trend data is that 4th-, 8th-, and 12th-graders were assessed rather than 9-, 13-, and 17-year-olds, thus allowing for comparisons across cohorts.

Table S16(a) Standard errors for the first text table in *Indicator 16*

	Total			Male			Female		
Year	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	1.0	0.9	1.2	1.1	1.0	1.2	1.0	0.9	1.3
1975	0.7	0.8	0.8	0.8	0.8	1.0	0.8	0.9	1.0
1980	1.0	0.9	1.2	1.1	1.1	1.3	1.1	0.9	1.2
1984	0.7	0.6	0.8	1.0	0.7	0.8	0.9	0.7	0.9
1988	1.1	1.0	1.0	1.4	1.3	1.5	1.3	1.0	1.5
1990	1.2	0.8	1.1	1.7	1.1	1.6	1.2	1.1	1.2
1992	0.9	1.2	1.1	1.3	1.7	1.6	0.9	1.2	1.1
1994	1.2	0.9	1.3	1.3	1.2	2.2	1.4	1.2	1.5
1996	1.0	0.9	1.1	1.5	1.2	1.3	1.2	1.2	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress,* 1997.

Table S16(b) Standard errors for the second text table in *Indicator 16*

	White			Black			Hispanic		
Year	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	0.9	0.7	1.0	1.7	1.2	1.7	—	—	—
1975	0.7	0.7	0.6	1.2	1.2	2.0	2.2	3.0	3.6
1980	0.8	0.7	0.9	1.8	1.5	1.8	2.3	2.0	2.7
1984	0.9	0.6	0.9	1.4	1.0	1.0	3.1	1.7	2.9
1988	1.4	1.1	1.2	2.4	2.4	2.4	3.5	3.5	4.3
1990	1.3	0.9	1.2	2.9	2.2	2.3	2.3	2.3	3.6
1992	1.0	1.2	1.4	2.2	2.3	2.1	3.1	3.5	3.7
1994	1.3	1.1	1.5	2.3	2.4	3.9	3.9	1.9	4.9
1996	1.2	1.0	1.2	2.7	2.6	2.7	3.5	2.9	4.1

— Not available.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *NAEP 1996 Trends in Academic Progress,* 1997.